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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference DOMO-003-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEAA16)	
International application No. PCT/EP2005/000354	International filing date (day/month/year) 14.01.2005	Priority date (day/month/year) 16.01.2004
International Patent Classification (IPC) or both national classification and IPC B32B9/00, B32B27/18, B01J35/06		
Applicant DOMO OUDENAARDE NV et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 8 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☒ Certain observations on the international application

Date of submission of the demand 16.11.2005	Date of completion of this report 31.03.2006
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Schweissguth, M Telephone No. +49 89 2399-2069 

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I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-29 as originally filed

Claims, Numbers

35-44 as originally filed

1-34 received on 18.11.2005 with letter of 16.11.2005

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-10,31-34
	No: Claims	23
Inventive step (IS)	Yes: Claims	1-10 (provisionally),31-34
	No: Claims	23-30
Industrial applicability (IA)	Yes: Claims	1-34
	No: Claims	

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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Application documents:

Claims 1-34 as filed on 18.11.2005 with letter of 16.11.2005

Prior art:

- D1: PATENT ABSTRACTS OF JAPAN vol. 2003, no. 07, 3 July 2003 (2003-07-03) & JP 2003 071967 A (TAKIRON CO LTD), 12 March 2003 (2003-03-12)
- D2: PATENT ABSTRACTS OF JAPAN vol. 2003, no. 05, 12 May 2003 (2003-05-12) & JP 2003 019764 A (ACHILLES CORP; MISAWA CERAMICS CORP; MISAWA HOMES CO LTD), 21 January 2003 (2003-01-21)
- D3: PATENT ABSTRACTS OF JAPAN vol. 2002, no. 10, 10 October 2002 (2002-10-10) & JP 2002 178459 A (NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL & TECHNOLOGY; TOUGEDA HIROSH), 26 June 2002 (2002-06-26)
- D4: PATENT ABSTRACTS OF JAPAN vol. 2003, no. 04, 2 April 2003 (2003-04-02) & JP 2002 371479 A (KURARAY CO LTD), 26 December 2002 (2002-12-26)
- D5: DATABASE WPI Section Ch, Week 200276 Derwent Publications Ltd., London, GB; Class D22, AN 2002-700542 XP002283098 & JP 2002 178459 A (null) 26 June 2002 (2002-06-26)
- D6: DATABASE WPI Section Ch, Week 200365 Derwent Publications Ltd., London, GB; Class A97, AN 2003-682980 XP002283099 & JP 2003 071967 A (TAKIRON KK) 12 March 2003 (2003-03-12)
- D7: DATABASE WPI Section Ch, Week 200365 Derwent Publications Ltd., London, GB; Class A97, AN 2003-682980 XP002283100 & JP 2003 071967 A (TAKIRON KK) 12 March 2003 (2003-03-12)
- D8: DATABASE WPI Section Ch, Week 200330 Derwent Publications Ltd., London, GB; Class D22, AN 2003-305277 XP002283101 & JP 2003 019764 A (null) 21 January 2003 (2003-01-21)
- D9: WO98/52871
- D13: WO02/085989

Independent claims 1, 2:

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The features of independent claim 1 referring to a protective overlay is optional and may thus be disregarded in the present analysis.

Further to this optional item independent claim 1 as presently on file refers to a laminate comprising a decorative upper layer wherein this layer comprises a web of fibres having deposited therein and/or thereon photocatalyst particles embedded in a binder.

The closest prior art is considered to be document D1 or D6 corresponding to abstracts of document JP 2003071967. D1 and D6 describe a decorative laminated sheet wall surface comprising a decorative layer and a photocatalyst layer containing titanium oxide, formed on a base material layer. The base material layer comprises a thermosetting resin impregnated with inorganic substance. This document does not describe a laminate as presently claimed.

The subject-matter of claim 1 differs from that of D1 and D6 by the following features: a base layer selected from the group consisting of fiber board, particle board, plastic sheet or wood, wherein a decorative layer is provided comprising a web of fibers impregnated with resin comprising photocatalyst. The subject matter of claim 2 differs from that of D1 and D6 by the following features a protective overlay comprising a web of fibers impregnated with resin comprising photocatalyst.

The technical effect achieved by these distinguishing features is to obtain a floor covering of suitable physical resistance including fungus and bacterial resistance properties and able to decompose malodorous substances.

The objective technical problem of the present invention must therefore be regarded as being how to obtain a floor covering of suitable resistance including fungus and bacterial resistance properties and able to decompose malodorous substances.

The present invention solves this problem by providing as floor covering a laminate comprising a base layer of specific composition and a decorative layer comprising a web of fibers impregnated with a resin containing photocatalysts.

Documents D1 and D6 do not provide a teaching that addresses the problem of providing a floor covering having suitable resistance and displaying antifungal and antibacterial

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properties. Therefore, independent claim 1 demonstrates an inventive step in view of this documents. D1 and D6 only address wall surface decorative paper with reduced staining.

This interpretation is provisionally followed for present independent claim 1.

Independent claim 11 (former claim 18):

Independent claim 11 refers to a protective overlay comprising a web of fibers wherein the web of fibers further comprises abrasion resistant particles.

Therefore, the problem solution-approach according to claim 11 will be different from that of claims 1 and 2 since claim 11 does refer to another technical problem.

According to Applicants letter of reply the basis of this claim is to be found in the description on page 8, lines 28 to 29 and page 11, lines 8-9. The technical problem is thus directed to the abrasion resistance and not as pointed out above to "obtain a floor covering of suitable physical resistance including fungus and bacterial resistance properties and able to decompose malodorous substances".

Accordingly, no opinion is currently given for this subject-matter since the feature "abrasion resistance" has not been searched.

Claim 23 (former claim 30):

Claim 23, now being drafted as independent claim is directed to a (finishing) composition.

Even having regard to Applicants letter of reply the disclosure of document D13 is considered to be novelty destroying for the subject-matter of claim 23. Since the claim is directed to a composition the feature "finishing" may be disregarded. Furthermore, reference to a coacervate is only optional.

While the claimed percentages are disclosed in the abstract of D13 it is clear from claim 4

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of D13 that the therein described composition refers also to particles.

Dependent claims:

Document D3 (WPI-abstract) refers to a cloth which takes away inventive activity from dependent claim 2.

The subject-matter of dependent claim 4 lacks novelty, see disclosure of titanium dioxide in the WPI-abstract of document D1.

Dependent claims 5 and 6 describe the variation of the titanium dioxide material which is known to any person normally skilled in the art.

Dependent claims 8 to 10 and 12 to 15 refer to variations of polymers which are obvious to the skilled person.

The further dependent claims referred to in the European Search Report treat the same subject-matter as above discussed claims. Accordingly, the same objections apply thereto.

Clarity:

(The clarity objection in view of two independent claims of the same category is maintained)

Independent claims 1 and 2 differ with regard to the protective overlay and the decorative upper layer. The essential features however remain the same. This features are directed to a laminate and a web of fibers having deposited therein and/or thereon photocatalyst particles embedded in a binder. In summary, from the claims 1 and 2 it remains unclear to which extent the overlay and the upper layer are comparable or do have different characteristics. If, however, there is no further distinction in the claims both claims would appear to lack clarity (Art. 6 PCT).

Claim 31 and carpet claim 34:

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The use of the according solution (providing the finishing composition according to claim 23 ...) in order to form the treatment of carpets and the method is not described in the prior art available. Closest prior art D9 demonstrates the use of a photocatalyst for metal plate coating. Therefore, independent claims 31 and 34 and therefrom dependent claims meet the requirements of Art. 33(2)(3) PCT.

Reference signs:

If it is intended to enter the European regional phase reference signs should be used within the claims.

Annex 1

Claims

1. Laminate comprising a decorative upper layer, optionally a protective overlay and a base layer, wherein said decorative upper layer comprises a web of fibers having deposited therein and/or thereon photocatalyst particles embedded in a binder and wherein said base layer is selected from the group consisting of fiber board, particle board, plastic sheet or wood.
2. Laminate comprising a decorative upper layer, a protective overlay and optionally a base layer, wherein said protective overlay comprises a web of fibers having deposited therein and/or thereon photocatalyst particles embedded in a binder.
3. Laminate according to claim 1 or 2, wherein said fibers are cellulose fibers.
4. Laminate according to any of claims 1 to 3, wherein said photocatalyst particles are selected from the group comprising TiO_2 , ZnO , SiO_2 , $\text{Ti}_{1-x}\text{Sn}_x\text{O}_2$, SrTiO_3 , Fe_2O_3 , CdS , CdSe , WO_3 , FeTiO_3 , GaP , GaAs , GeAs , RuO_2 , MoS_3 , LaRhO_3 , CdFeO_3 , Bi_2O_3 , MoS_2 , In_2O_3 , CdO , SnO_2 , SiC , InP and/or mixture thereof.
5. Laminate according to claim 4, wherein said photocatalyst particles are TiO_2 particles.
6. Laminate according to claim 5, wherein said TiO_2 particles are anatase TiO_2 particles.
7. Laminate according to any of claims 1 to 6, wherein said photocatalyst particles are doped with elements selected from the group comprising Nb, Mo, Cr, V, Cu, Mg, Ag, Ru, Au, N, Nd, Pd, Pt, Fe, Ni, Mn and the like.
8. Laminate according to any of claims 1 to 7, wherein said binder is selected from the group comprising melamine resin, urethane resin, celluloid, chitin, starch sheet, polyvinyl alcohol, polyester resins, urea-formaldehyde, dicyandiamide-formaldehyde, epoxy resins, polyurethane resins, (poly)silane resins, (poly)siloxane resins, silazane resins, acrylamides resins, acrylic silicon resins, acrylurethane resins, polyacrylamide resins and the like and mixtures thereof.
9. Laminate according to any of claims 2 to 8, wherein said the base layer is selected from the group comprising of fiber board, particle board, a plastic sheet, wood and the like.
10. Laminate according to any of claims 1 to 9, further comprising at the bottom of the base layer a balancing sheet.
11. Protective overlay, wherein said protective overlay comprises a web of fibers having deposited therein and/or thereon photocatalyst particles embedded in a binder, wherein said web of fiber further comprises abrasion resistant particles.

12. Protective overlay according to claim 11, wherein said fibers are cellulose fibers.
13. Protective overlay according to claims 11 or 12, wherein said photocatalyst particles are selected from the group comprising TiO_2 , ZnO , SiO_2 , $\text{Ti}_{1-x}\text{Sn}_x\text{O}_2$, SrTiO_3 , Fe_2O_3 , CdS , CdSe , WO_3 , FeTiO_3 , GaP , GaAs , GeAs , RuO_2 , MoS_3 , LaRhO_3 , CdFeO_3 , Bi_2O_3 , MoS_2 , In_2O_3 , CdO , SnO_2 , SiC , InP and/or mixture thereof.
14. Protective overlay according to claim 12, wherein said photocatalyst particles are TiO_2 particles.
15. Protective overlay according to claim 14, wherein said TiO_2 particles are anatase TiO_2 particles.
16. Protective overlay according to any of claims 11 to 15, wherein said photocatalyst particles are doped with elements selected from the group comprising Nb, Mo, Cr, V, Cu, Mg, Ag, Ru, Au, N, Nd, Pd, Pt, Fe, Ni, Mn and the like.
17. Protective overlay according to any of claims 11 to 16, wherein said binder is selected from the group comprising melamine resin, urethane resin, celluloid, chitin, starch sheet, polyvinyl alcohol, polyester resins, urea-formaldehyde, dicyandiamide-formaldehyde, epoxy resins, polyurethane resins, (poly)silane resins, (poly)siloxane resins, silazane resins, acrylamides resins, acrylic silicon resins, acylurethane resins, polyacrylamide resins and the like and mixtures thereof.
18. Process for the production of a protective overlay according to any of claims 11 to 17, comprising the step of
- a) providing a fiber web layer
 - b) treating said fiber web layer with a photocatalyst composition comprising photocatalyst particles, a binder, abrasion resistant particles and a solvent, and
 - c) hardening said treated fiber web to obtain a protective overlay comprising a web of fibers having deposited therein and/or thereon photocatalyst particles embedded in a binder.
19. Process according to claim 18, wherein said solvent is selected from the group comprising water, ethylene glycol butyl ether, ethanol and the like, and/or mixture thereof.
20. Process according to claim 18 or 19, wherein said treating step (b) is an impregnating step.
21. Process according to claim 18 or 19, wherein said treating step (b) is selected from the group comprising dipping, flooding, coil coating, spraying, centrifuging, screen printing, vacuum infiltrating and the like.

22. Process according to any of claims 18 to 21 wherein said drying step (c) comprises thermal hardening, radiation hardening and the like.
23. Finishing composition comprising (a) 1 to 50 % by weight of a photocatalyst composition, (b) 50 to 99 % of a liquid carrier and (c) optionally 0 to 15 % of a coacervate, wherein said photocatalyst composition comprises (i) 0.01 to 5 % by weight of photocatalyst particles, (ii) 0.01 to 5 % by weight of a binder and (iii) 50 to 99 % by weight of a solvent.
24. Finishing composition according to claim 23, wherein said photocatalyst particles are selected from the group comprising TiO_2 , ZnO , SiO_2 , $\text{Ti}_{1-x}\text{Sn}_x\text{O}_2$, SrTiO_3 , Fe_2O_3 , CdS , CdSe , WO_3 , FeTiO_3 , GaP , GaAs , GeAs , RuO_2 , MoS_3 , LaRhO_3 , CdFeO_3 , Bi_2O_3 , MoS_2 , In_2O_3 , CdO , SnO_2 , SiC , InP and/or mixture thereof.
25. Finishing composition according to claim 23 or 24 wherein said photocatalyst particle is anatase TiO_2 .
26. Finishing composition according to claim 23 or 34, wherein said coacervate is selected from the group comprising Levalin VKU-N (Bayer), Primasol SD (BASF), Irgapadol PN New (Ciba), Lyogen AF (Clariant AG), Intratex AF (Crompton & Knowles) and the like.
27. Finishing composition according to any of claims 23 to 26, further comprising soil and/or stain resists products.
28. Finishing composition according to any of claims 23 to 27, wherein the liquid carrier and the solvent are each independently selected from the group comprising water, alkylene glycols, polyalkylene glycols, alkylene carbonates, ethanol, propanol and isopropanol and mixtures thereof.
29. Finishing composition according to any of claims 23 to 28, wherein said binder is selected from the group comprising melamine resin, urethane resin, celluloid, chitin, starch sheet, polyvinyl alcohol, polyester resins, urea-formaldehyde, dicyandiamide-formaldehyde, epoxy resins, polyurethane resins, (poly)silane resins, (poly)siloxane resins, silazane resins, acrylamides resins, acrylic silicon resins, acrylurethane resins, polyacrylamide resins and the like and mixtures thereof.
30. Use of a finishing composition according to any of claims 23 to 29, for the treatment of carpets.
31. Method for the preparation of a carpet having air clarifying properties comprising the steps of: providing a finishing composition according to any of claims 23 to 29, and applying said finishing composition onto a carpet thereby obtaining a carpet having air clarifying properties.

32. Method according to claim 31, wherein said finishing composition is provided as a foam.
33. Method according to claim 31, wherein the finishing composition is applied by means of a foam applicator.
34. Carpet having air clarifying properties obtained by a method according to any of claim 31 to 33.